

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A bone screw having a lead portion and a tail portion, and a intermediate transition portion, each of the lead portion and the tail portion comprising a root and a helical thread ~~(having a thread lead)~~ formed on the root, the thread on ~~each of the lead~~ portion having an approximately constant diameter along a significant portion of its length and tail portions having an approximately constant diameter along a significant portion of its length, in which the diameter of the thread on the tail portion is greater than that of the thread on the lead portion, and in which the thread lead of the thread on the lead portion is equal to the thread lead of the thread on the tail portion,

wherein the intermediate transition portion is configured between the threads of the lead portion and the tail portion, and is provided with a diameter that decreases gradually between the thread of the lead portion and the thread of the tail portion

wherein the tail portion is provided with a socket end, wherein the socket end of the tail portion is adapted to be flush with the surface of the bone or under the surface of the bone after the bone screw is fully inserted.
2. (Original) A bone screw as claimed in claim 1, in which the thread on the lead portion of the screw is a multi-start thread.

3. (Original) A bone screw as claimed in claim2, in which the number of starts of the thread on the lead portion is equal to the ratio of the thread pitch of the thread on the tail portion to the thread pitch of the thread on the lead portion.
4. (Original) A bone screw as claimed in claim 2, in which the thread on the lead portion of the screw is a double-start thread and the thread on the tail portion of the screw is a single-start thread, and in which the thread pitch of the thread on the tail portion is equal to twice the thread pitch of the thread on the lead portion.
5. (Original) A bone screw as claimed in claim2, in which the thread on the tail portion of the screw is a continuation of the one of the thread on the lead portion.
6. (Original) A bone screw as claimed in claim 1, in which the ratio of the diameter of the thread on the tail portion to that of the diameter of the thread on the lead portion is at least about 1.22, preferable at lead about 1.5.
7. (Original) A bone screw as claimed in claim 1, in which the ratio of the diameter of the thread on the tail portion to the diameter of the thread on the lead portion is not more than about 2.3, preferably not more than about 2.0.
8. (Original) A bone screw as claimed in claim 1, in which the diameter of the root of the tail portion is greater than the diameter of the root of the lead portion.

9. (Original) A bone screw as claimed in claim 8, in which the ratio of the diameter of the root of the tail portion of the diameter of the root of the lead portion is at least about 1.2 preferably at least about 1.4.
10. (Original) A bone screw as claimed in claim 8, in which the ratio of the diameter of the root of the tail portion to the diameter of the root of the lead portion is not more than about 2.3 preferably not more than about 2.0.
11. (Original) A bone screw as claimed in claim 1, in which the value of the thread aspect ratio, defined by the expression.
12. (Original) A bone screw as claimed in claim 11, in which the ratio of the thread aspect ratio of the thread on the tail portion to the thread aspect ratio of the thread on the lead portion is at least about 1.2, preferably at least about 1.35.
13. (Original) A bone screw as claimed in claim 11, in which the ratio of the thread aspect ratio of the thread on the tail portion to the thread aspect ratio of the thread on the lead portion is not more than about 2.2, preferably not more than about 2.0.
14. (Original) A bone screw as claimed in claim 1, which has a bone extending through it along its length.

15. (New) (Currently Amended) A bone screw having a lead portion and a tail portion, and a intermediate transition portion, each of the lead portion and the tail portion comprising a root and a helical thread (having a thread lead) formed on the root, the thread on each of the lead portion having an approximately constant diameter along a significant portion of its length and tail portions having an approximately constant diameter along a significant portion of its length, in which the diameter of the thread on the tail portion is greater than that of the thread on the lead portion, and in which the thread lead of the thread on the lead portion is equal to the thread lead of the thread on the tail portion, wherein the intermediate transition portion configured between the threads of the lead portion and the tail portion, is provided with a diameter that decreases gradually between the thread of the lead portion and the thread of the tail portion, and wherein a root diameter of the lead portion is 4.5 mm and a root diameter of the tail portion is 6.5 mm.